

Amend claim 1 to read:

I claim:

1. An engine comprising:

a pair of work members each including an efficient 1-way clutch further comprising a drive race and a driven race, a combustion cylinder, a piston for reciprocating in said cylinder, a piston rod connected to the piston and transmitting power to a periphery of the drive race by a first means; each driven race secured on a power output shaft; and  
an idler gear located between and driven by the drive races so that the drive races maintain synchronous motion between the two out of phase pistons as the driven race transmits the power to the shaft.

Cancel claims 11-21 in amendment 5 and add the following new claims 22-32.

22. The engine of claim 10 in which the 4-stroke includes;

an intake stroke;  
said drive race comprising a cogwheel;  
a pair of fixed channels;  
a chain having ends secured to said cogwheel and to the end of said piston rod, the chain driven by the cogwheel during said intake stroke, the chain further comprising links, the links further comprising extensions into said pair of channels wherein the chain effects said intake stroke.

23. A 1-way clutch comprising;

a drive race and a driven race, a power transmitting unit; and  
said unit carried by the drive race or the driven race wherein the unit efficiently transmits power between the races perpendicular to a radial of the 1-way clutch.

24. The 1-way clutch of claim 23 in which the said transmitting unit comprises a unit piston and a

trigger, said transmitting unit carried by the driven race;  
said unit piston shiftable along a clutch radial into and out of contact with said drive race; and  
said trigger detecting motion change in said drive race wherein the transmitting unit transmits the power between the drive race and the driven race.

25. The combination of claim 24 in which the said transmitting unit further comprises hydraulics wherein said motion change actuates said trigger, the trigger further actuating the hydraulics to shift said unit piston.

26. The combination of claim 24 in which the said transmitting unit comprises a lever wherein the said trigger tilts the lever in response to said motion change, said tilt causing the lever to shift said unit piston.

27. The combination of claim 26 which includes a gear mesh between the said lever and the said unit piston.
28. The combination of claim 26 wherein the said unit piston and the said lever are combined into a single piece.
29. The combination of claim 24 in which the said drive race includes a breakaway embodiment, the embodiment further comprising a first rim and a second rim; said first rim and said second rim comprising keystone shaped extensions; and a peripheral band comprising keystone shaped parts along both side edges wherein the extensions interlock with the parts to prevent radial separation of the embodiment.
30. The combination of claim 29 in which the said shaft supports a first journal box and a second journal box;  
at least one first spoke linking the said first rim and the first journal box, at least one second spoke linking the said second rim and the second journal box; and  
a first snap ring adjacent the said first journal box, a second snap ring adjacent the said second journal box wherein axial separation of the embodiment is prevented.
31. The combination of claim 30 in which the said embodiment includes a dowel wherein the dowel prevents axial separation of the embodiment.
32. A crankshaft engine comprising;  
a piston rod of length  $L$ , a crank arm of length  $r$ , a ratio  $L/r$ ; and  
a provisional patent application date of OCT 17, 2001 for this present CIP wherein the ratio is greater than any ratio  $L/r$  before the said OCT 17, 2001 date.

## ARGUMENT TO THE ELECTION/RESTRICTION


Title: Interchangeable 2-Stroke or 4-Stroke High Torque Power Engine  
CIP Application No: 10/643,274  
Filing Date: 08/18/2003

The following argument includes the matter in amendment 5 to this application.

The engine's efficiency and long life is the goal of this invention. The combination as now claimed requires the 1-way clutch subcombination because the prior art fails. By including "an efficient 1-way clutch" in claim 1, the claimed engine combination requires the claimed 1-way clutch subcombination since the transmission of power between the races perpendicular to a 1-way clutch radial is as efficient as it can get. It eliminates compressive force along the clutch radial that produces heat. Heat can degrade the clutch and is known to have caused 1-way clutches to fail. Further, engineered backlash is negligible (backlash over stresses the parts) and the contacting surfaces have a high coefficient of static friction that also reduces force between the contacting surfaces. The coefficient has been prior art for decades, e.g. friction clutches, so it is not claimed. Equations to reduce backlash are given in my 1-way clutch patent no. 6,571,925 so reduced backlash is not claimed. The subcombination 1-way clutch also includes high indexing, high loading, and long life for wide use of the engine combination to be practical.

My search of the prior art covered current 1-way clutches including sprag, roller-ramp, magnetic, cam, and the helicopter's main rotor hub "free wheeling unit". None offer the required efficiency. The examiner's search leading to my 6,571,925 patent revealed 7 earlier patents issued between Oct 1878 – Nov 1978. None of them can satisfy the efficiency required by this engine.

Attached is a notarized rough draft of a variation of the 1-way clutch designs in the CIP application FIGs 7-13. I did not include the draft because I thought it was obvious and there was not room left for it on the drawing sheets. The phrase, "said drive race and said driven race" in claim 23 is meant to allow the power transmitting unit to be carried by the drive race, e.g., in the attached draft or the driven race in FIGs 7-13. I believe the clutch as herein claimed includes the attached and I request that the attached be entered in the record of this application.

  
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